

## Electrochemical semi:system for high temp. fuel elements - has carbonate electrolyte melt with added carbon

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Inventor:

Applicant:

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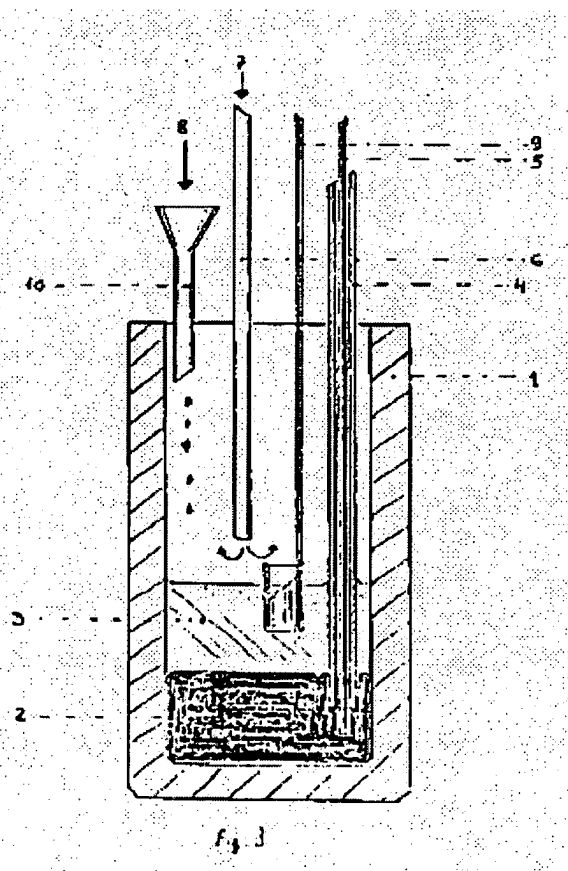
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### Abstract of DE4004220

Electrochemical semisystem (electrode), for use in galvanic high temp. fuel elements, has an electrolyte of carbonate melt to which carbon is added, and is galvanically combusted.

The improvement is that a) as sec. fuel, a metal which is liq. at the operating temp. and has a significantly smaller affinity (free reaction enthalpy) to O, relative to C or CO; b) the metal melt and the carbonate melt are in a heatable crucible, in direct contact with one another; c) the metal melt is connected to a current shunt electrode d) on current flow metal from the metal melt is transformed into ionic form in the carbonate melt, whereby the metal/metal ion transfer is the potential determining the current-providing step; and e) to the carbonate melt, solid C is added, as prim. fuel, in such amt. that, on current flow, the amts. and concn. of participants in the potential-and current-providing reaction, by a fuel conversion step, remain unchanged, by re-forming amts. of elemental metal, consumed by the metal/metal ions transition, by a reverse transition of metal ions/metal, by chemical redn. of the metal ions in the melt by the added C.

**ADVANTAGE** - New system combines the high utilization level of fuel elements operating with solid C, with good current-carrying capacity.



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